



US Army Corps
of Engineers
New England Division
AUGUST 1987

DEFINITE PROJECT REPORT
PERLEY BROOK
FORT KENT, MAINE

EMERGENCY STREAMBANK PROTECTION



**EMERGENCY STREAMBANK PROTECTION
PERLEY BROOK
FORT KENT, MAINE**

DEFINITE PROJECT REPORT

**Department of the Army
New England Division, Corps of Engineers
Waltham, Massachusetts**

SYLLABUS

This study, authorized under the special continuing authority contained in Section 14 of the 1946 Flood Control Act, as amended, investigates a streambank erosion problem along Perley Brook in Fort Kent, Maine, that endangers the upstream highway embankment of Maine Route 161. The highway is the primary north-south connector between two of northern Maine's largest communities, namely Caribou and Fort Kent.

Failure of the highway could occur during any future high flow period. The present erosion is located along the right bank at the base of a 20-foot high embankment and adjacent to two large (12'x6" x 13'x10") corrugated metal pipe culverts that carry the stream under the highway. Recent deposition of sand and gravel materials in the general vicinity of the erosion area have directed channel flows toward the problem area and if this condition is allowed to continue the highway could fail and a 30-mile detour would be necessary during the repair period.

This report describes the plan formulation process, including development and evaluation of several erosion control measures.

The selected plan provides the greatest benefits at the least cost and includes the placement of stone slope protection for a total length of about 100 feet along the Route 161 embankment and adjacent lands. In addition, two areas of streambank deposition and two gravel shoals in the stream would be removed to provide better channel alignment toward the culverts. The proposed project has an estimated total first cost of \$56,000, including \$1,000 for necessary lands, easements and rights-of-way. Taken at the current Federal interest rate of 8-7/8 percent over a 25-year amortization period, the annual project cost would be \$6,000. This includes an estimated annual operation and maintenance cost of \$350. Total average annual benefits are estimated at \$12,500 resulting in a benefit-to-cost ratio of 2.1 to 1.

It is recommended that, subject to applicable items of local cooperation and cost sharing, the proposed plan be authorized for construction. A letter of intent to meet these non-Federal obligations, was provided by the Maine Department of Transportation on 20 July 1987 and is included in Appendix B of this report.

**DEFINITE PROJECT REPORT
EMERGENCY STREAMBANK PROTECTION
PERLEY BROOK, FORT KENT, MAINE**

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**DEFINITE PROJECT REPORT - FINAL
EMERGENCY STREAMBANK PROTECTION
PERLEY BROOK, FORT KENT, MAINE**

AUGUST 1987

AUTHORITY

This report provides the results of investigations, accomplished under the special continuing authority contained in Section 14 of the 1946 Flood Control Act, to determine the need and feasibility of constructing streambank erosion control measures along Perley Brook in Fort Kent, Maine. Section 14 allows for Corps of Engineers' participation in the construction of economically justified streambank erosion control projects when essential public works or public use facilities are endangered by erosion. Non-Federal cost sharing by a legally empowered and financially responsible local sponsor is a requirement of the Section 14 authority. Federal participation under the Section 14 authority is currently limited to \$500,000.

STUDY AREA

Fort Kent, Maine, is located in far northern Aroostook County, about 50 miles northwest of Presque Isle, Maine, and adjacent to the United States-Canada border. It is situated at the confluence of the St. John and Fish Rivers.

Perley Brook is a tributary of the Fish River, having a total drainage area of about 16 square miles. It is formed by the North and South Branches about one mile upstream from the principal problem area. The erosion site is located at the Route 161 highway embankment which is only about 500 feet upstream from the Fish River confluence (see map - Figure 1).

**EROSION
PROBLEM**

Continuing erosion conditions caused by high stream stages, principally during the spring runoff periods, threaten destruction of the Route 161 highway embankment, adjacent to two 12'x 6" x 13'x10" corrugated metal pipe (CMP) culverts that carry Perley Brook under the roadway. The current erosion is immediately adjacent to a concrete highway boundary marker at the base of the embankment slope. The erosion area extends upstream about 100 linear feet (see photos - Figure 2).

There are two primary reasons why the erosion has occurred and will continue if protective measures are not constructed. First, the entrance to the highway culverts is not direct and streamflows are directed toward the problem area before entering the culverts (see plan - Figure 3). This also causes shoaling to partially block the culvert entrances thereby accelerating the erosion condition. Secondly, about 300 feet upstream from the culverts, Perley Brook makes a 90 degree turn. At this location, riverbank materials

from an exposed 40-foot high embankment are eroded and carried to two separate areas where they are deposited adjacent to the riverbank. This basically causes the stream to make an "S" bend before entering the culverts. Although the highway embankment is about 20 feet high at the culverts, the erosion area which is subject to the improvement noted in the report is only about 10 feet high due to the sloping highway grade. The two principal shoaled areas are about 10 feet wide by 40 feet long and 2 to 4 feet high.

There is no USGS streamflow gage located on Perley Brook. The nearest gage is located on the Fish River just upstream from Perley Brook's confluence with the Fish River. The following is a list of estimated peak flow rates, their recurrence intervals, water depths and energy gradients at the erosion site which was derived from the flood insurance study completed for the town in December 1979.

<u>Recurrence Interval</u> (years)	<u>Peak Discharge</u> (cfs)	<u>Water Depth</u> (ft)	<u>Energy Gradient</u> (ft/ft)
10	1,000	9.5	0.00270
50	1,900	12.5	0.00250
100	2,000	12.8	0.00175

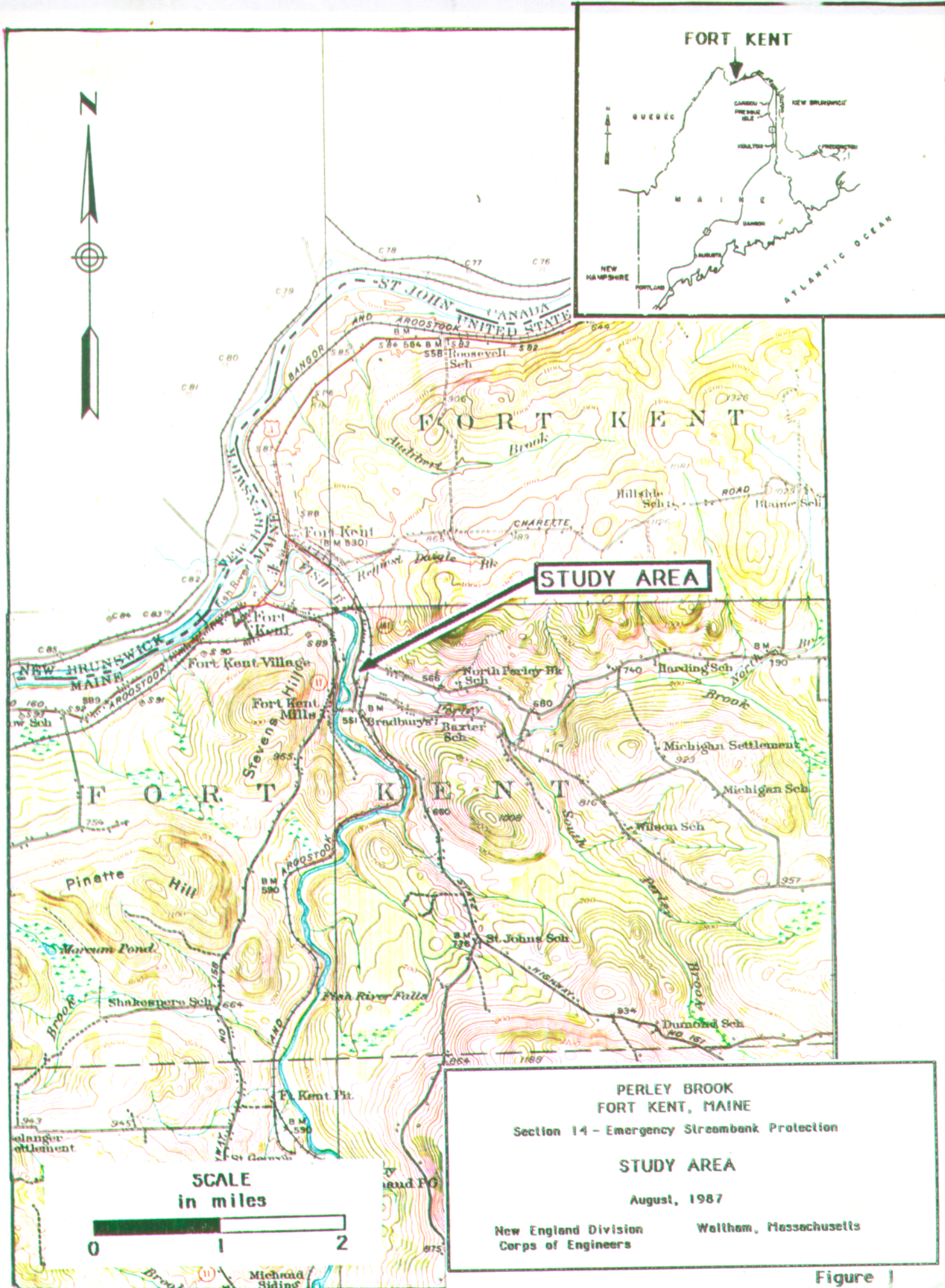
Hydraulic shear stress conditions adjacent to the toe of the embankment were determined for an estimated annual event, as well as for the 10, 50 and 100-year events. The hydraulic characteristics associated with the 50-year event produced the most severe condition.

PLAN FORMULATION

Four separate methods of protection were initially investigated to determine a cost effective plan for protecting the Route 161 highway embankment. These included: (1) stone slope protection, (2) precast concrete modular wall, (3) precast concrete grid blocks, and (4) gabions.

Stone slope protection would consist of placement of a layer of graded stone on a layer of bedding materials. The existing right bank would be sloped and some of the excavated materials from the shoaled area on the left bank would be utilized as fill under the stone slope protection. The protection would be 100 feet long and 6 to 10 feet high. It is estimated that 150 cubic yards of material would be taken from four shoaled areas. Most of this material would be hauled to an appropriate disposal area. The location of the two principal shoaled areas and two smaller gravel deposits in the brook are shown on the site plan.

Precast concrete modular wall construction consists of stacking hollow precast concrete modular sections along the eroded bank.





PERLEY BROOK
FORT KENT, MAINE
Section 14 - Emergency Streambank Protection

AREA PHOTOGRAPHS

August, 1987

New England Division
Corps of Engineers

Waltham, Massachusetts

Figure 2

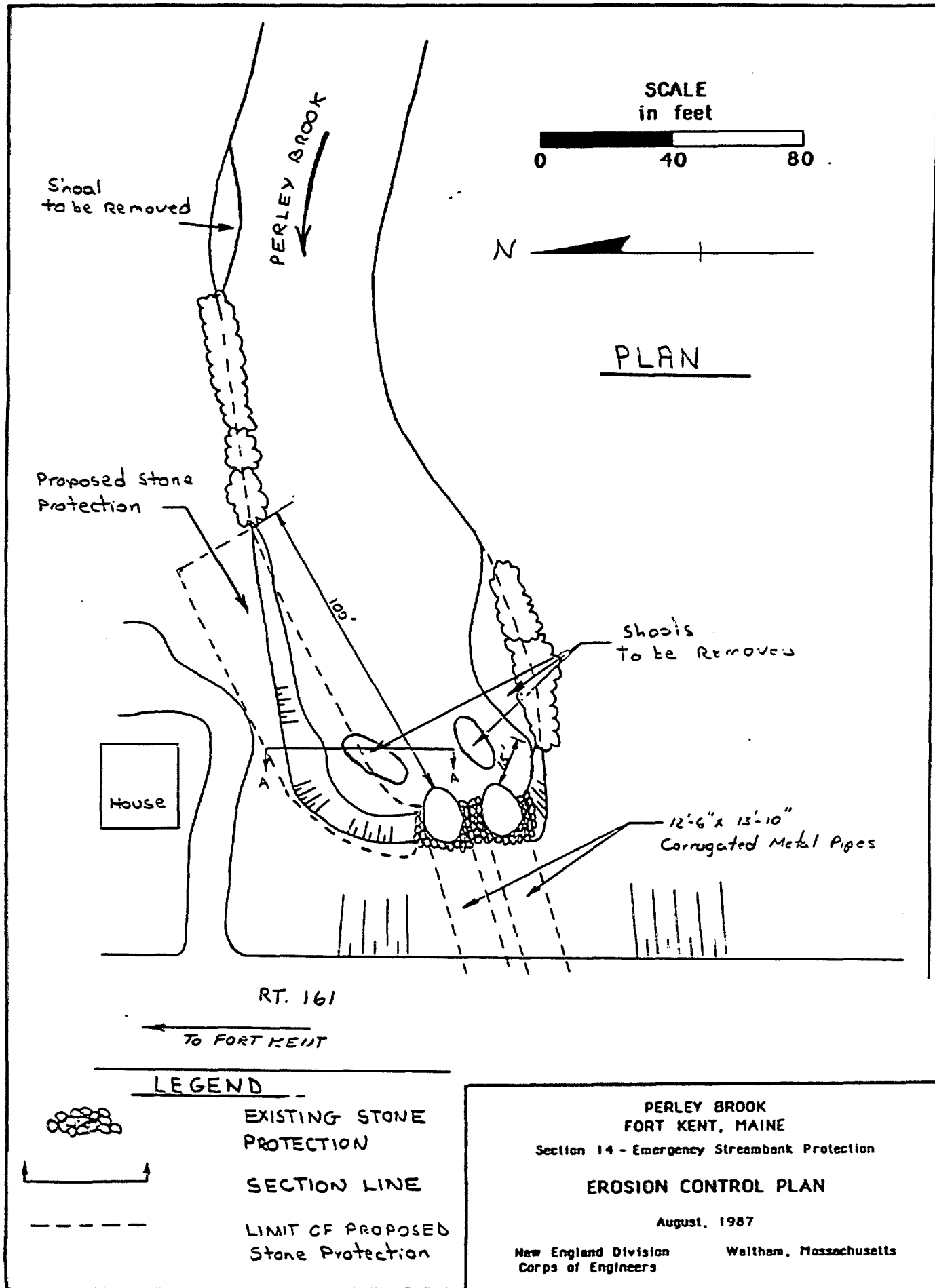


Figure 3

A concrete footing would be constructed and two 4-foot high modular units would be stacked to protect the 10-foot high embankment. Backfill would primarily consist of gravel materials taken from the excavated shoaled areas. The protection would be 100 feet long.

Precast concrete grid blocks would be placed on a 1 vertical to 2 horizontal slope, similar to the stone slope protection configuration after reshaping the bank and adding fill from the nearby shoal areas. In addition, the channel would be excavated to a depth of 3 feet at the base of the slope to provide for rock toe protection. The grid blocks would be placed on a filter material or gravel bedding.

Gabions are rock-filled wire baskets that are wired together to form a permeable barrier for erosion control. They would be stacked to a height of 8 to 10 feet similar to the modular wall construction previously described. Also, fill would be placed behind the gabions.

Providing stone slope protection to prevent erosion and loss of State Highway 161 was determined to be the least costly plan. Therefore, this plan was evaluated further to determine its effect on National Economic Development and environmental resources. The plan was also evaluated to determine its compliance with Executive Orders (EO) concerning Flood Plain Management and Wetlands Protection (EO 11988 and EO 11990). A summary of these evaluations is contained in the section Environmental Considerations.

SELECTED PLAN

The investigation of alternative plans disclosed that the placement of a graded system of stone slope protection, stone bedding and gravel bedding at the eroded area would be the most practical and cost effective method of preventing future streambank erosion of the Maine Route 161 highway embankment. It provides a technically sound and engineeringly feasible solution to the problem.

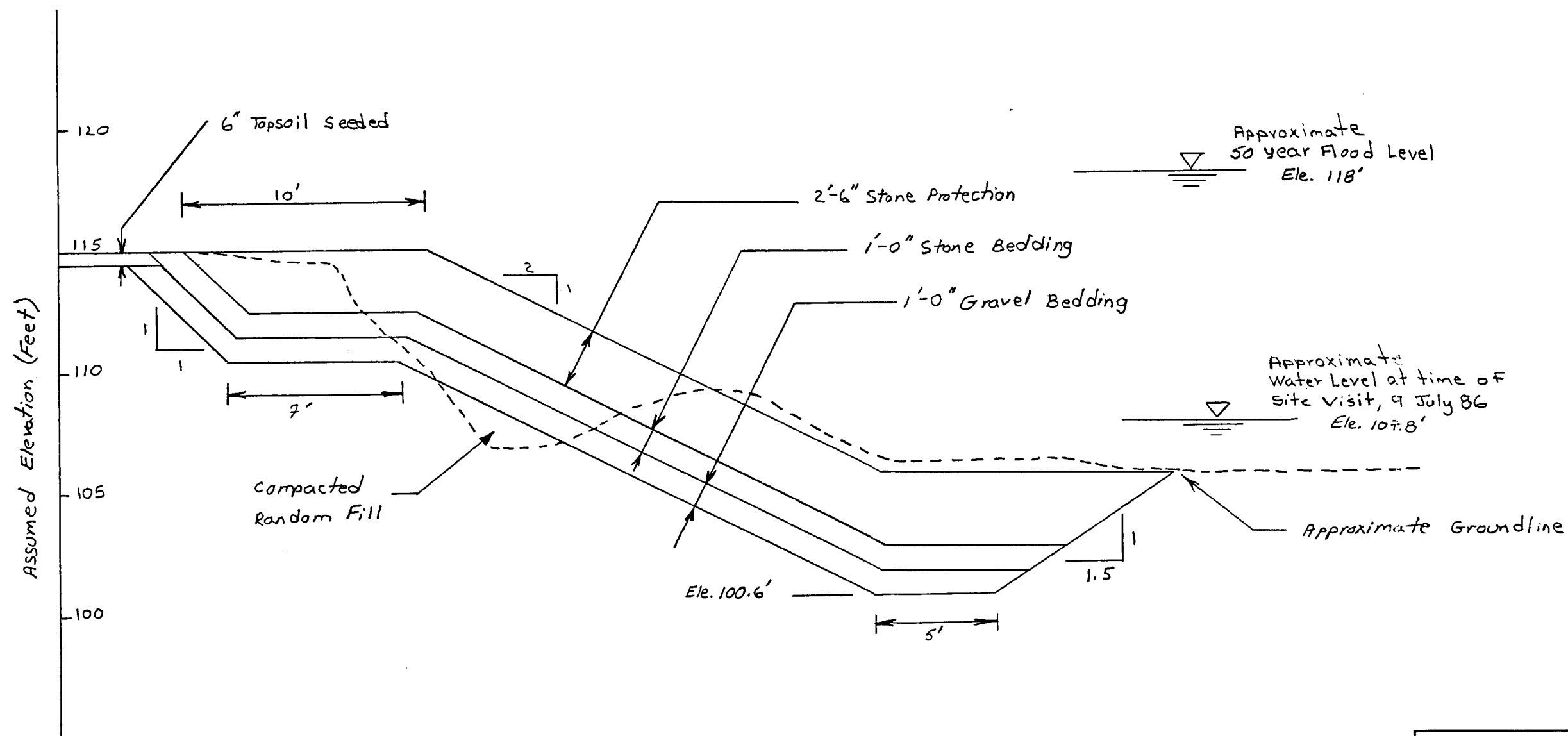
The selected plan calls for construction of a stone revetment along 100 linear feet of 6 to 10-foot high embankment adjacent to Route 161. The slope protection extends upstream along private property to prevent future erosion from extending around the protection and endangering an adjacent highway area. Stone protection was designed for the site based on the 50-year flood event. The D50 stone size needed to protect the bank from a flood of this magnitude is 1.1 feet. The slope protection would be placed on a 1 vertical to 2 horizontal slope. The stone protection would be 2'-6" thick while the stone bedding and gravel bedding layers would be one-foot thick (see Figure 4 - Typical Cross Section).

In addition to the rock protection, previously described, the proposed plan would also include the excavation of four river shoal areas. Two of the shoals are located adjacent to the left and right river banks, about 15 feet and 200 feet upstream of the Route 161 culverts, respectively. Removal of this deposition would involve the clearing of small trees and brush that have grown in these areas in recent years. Two smaller shoals are located in the river just upstream of the culvert entrances and are primarily composed of river sands and gravels. They could be utilized as random fill in the erosion area.

ESTIMATES OF FIRST COSTS AND ANNUAL CHARGES

Estimates of first costs and annual charges for the selected plan are presented in Table 1. The cost sharing requirement includes a 25 percent of first cost contribution by non-Federal interests, inclusive of necessary lands, easements and rights-of-way. Whereas the total first cost is estimated at \$56,000 and land costs are estimated at \$1,000, the non-Federal share of the first cost is currently estimated at \$13,000. However, this is predicated on receipt of favorable construction bids and could be either higher or lower depending on the accepted low bid price. An estimated \$350 for annual maintenance expenses is also included as a non-Federal responsibility.

Annual costs are computed based on the current interest rate for water resource projects of 8-7/8 percent and amortized over an economic project life of 25 years.



TYPICAL SECTION

SCALE in feet



PERLEY BROOK
FORT KENT, MAINE
Section 14 - Emergency Streambank Protection

EROSION CONTROL SECTION A-A

August, 1987

New England Division
Corps of Engineers

Wallham, Massachusetts

Figure 4

TABLE 1
ESTIMATES OF FIRST COSTS
AND ANNUAL CHARGES

FIRST COSTS

<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>COST</u>
SITE PREPARATION	1	JOB	L.S.	\$ 2,000
EXCAVATION, GENERAL	550	C.Y.	\$ 6	3,300
EXCAVATION, SHOALS	150	C.Y.	8	1,200
RANDOM FILL, COMPACTED	100	C.Y.	5	500
GRAVEL BEDDING	140	C.Y.	15	2,100
STONE BEDDING	150	C.Y.	30	4,500
STONE PROTECTION	350	C.Y.	35	12,250
TOPSOIL, SEEDED	60	S.Y.	10	600
				<hr/>
SUBTOTAL				\$ 26,450
CONTINGENCY				6,550
				<hr/>
TOTAL CONSTRUCTION COST				\$ 33,000
LANDS				1,000
ENGINEERING & DESIGN				15,000 *
SUPERVISION & ADMINISTRATION				7,000
				<hr/>
TOTAL ESTIMATED PROJECT FIRST COST				\$ 56,000

* Does not include pre-authorization costs of \$12,500

ANNUAL COST

INTEREST & AMORTIZATION	\$ 5,650
OPERATION & MAINTENANCE	350
<hr/>	
TOTAL ANNUAL COST	\$ 6,000

ESTIMATES OF BENEFITS AND BENEFIT-COST RATIO

Recent deposition of gravel materials in Perley Brook just upstream from the Route 161 culverts has directed normal and high discharge streamflows toward the right embankment (looking downstream) just upstream from the culverts.

The benefit analysis for protecting the highway embankment was based on traffic information provided by Maine Department of Transportation and an estimated cost of repairs if the "without project" condition is allowed to continue.

In the "without project" condition it is assumed that the culverts at State Route 161 would wash out every 5 years on the average. This would cause a 30-mile detour for truck traffic over Route 1, through Madawaska to get to Fort Kent.

It was reported that 4,000 vehicles per day use Route 161. Auto traffic would have a short detour over the Fish River Bridge at nearby Fort Kent Mills (see Figure 1). Annual benefits (transportation costs saved) are based on an estimate of 1,000 trucks per day, which would be detoured over a 5-day period while the road was being repaired. Benefits also include annual costs for road repair.

The following information indicates the methodology used for determining annual benefits attributable to a "with project" condition.

$$\frac{1,000 \text{ trucks} \times 5 \text{ days} \times 30 \text{ miles} \times \$0.35 / \text{mile}}{5 \text{ years}}$$

$$30,000 \times \$0.35 = \$ 10,500$$

(Est. road repair cost=\$10,000 every 5 yrs)

$$\frac{10,000}{5} = 2,000$$

$$\text{TOTAL BENEFIT (ANNUAL)} = \$ 12,500$$

Based on estimated annual costs of \$6,000 and estimated annual benefits of \$12,500, the benefit-cost ratio for the proposed project would be 2.1 to 1.

ENVIRONMENTAL CONSIDERATIONS

No significant environmental impacts are expected to occur during or after construction of the proposed erosion control project. A detailed account of environmental concerns is included in the Environmental Review (ER) which is Appendix A of this report.

The existing environment at the problem site is currently subject to rapid changes due to scouring and erosion of the highway embankment and adjacent lands. In shoaled areas, opposite and upstream of the problem area, there is a growth of small trees and brush (approximately 1/4-acre). Removal of the shoals would not cause significant adverse impact on the existing water quality because of the limited amount of material to be removed. Environmental impacts associated with the most feasible plan of erosion control are expected to be insignificant. These impacts would include short-term noise and dust pollution during the construction period, limited removal of vegetation and slight and temporary turbidity during shoal removal and protection placement.

While some of the excavated shoal material could be utilized as bedding gravel, most of it would be hauled to an appropriate disposal site. Siltation of the stream would be kept to a minimum by the incorporation of silt traps downstream from any instream excavation areas.

The proposed action would result in an overall positive impact on the problem site by halting further erosion and future disruption of highway usage. Impacts to wild, spawning population of brook trout would be avoided by scheduling construction during July and August, if possible. No significant impact to wildlife is anticipated to result from this project due to its suburban setting. In addition, the Maine Department of Inland Fisheries and Wildlife has reported that there are no critical areas for deer near the project area.

Coordination with the U.S. Fish and Wildlife Service and the Maine Planning Office's Critical Areas Program indicated that an endangered plant species, furbish lousewort, no longer exists in the proposed project area. Coordination with the Maine Historical Preservation Commission indicates that the project will have no effect upon any structure or site of historical, architectural or archaeological significance. Water Quality Certification will be sought during the preparation of plans and specifications.

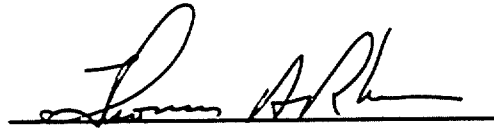
REQUIREMENTS OF LOCAL COOPERATION

The State of Maine Department of Transportation is the non-Federal sponsor for the proposed project. In their letter of intent, dated 20 July 1987, they have indicated their willingness to support the project and meet required items of local cooperation including cost sharing.

The draft Local Cooperation Agreement (LCA) indicates that the local sponsor will:

- a. Provide without cost to the United States, all lands, easements, rights-of-way, and utility relocations necessary for project construction.
- b. Hold and save the United States free from damages due to the construction, operation and maintenance of the project, except where such damages are due to the fault or negligence of the United States or its contractors.
- c. Maintain and operate the project after completion without cost to the United States in accordance with regulations prescribed by the Secretary of the Army. Annual operation and maintenance costs are currently estimated to be \$350.
- d. Prevent future encroachment which might interfere with proper functioning of the project.
- e. Comply with Title VI of the Civil Rights Act of 1964 (78th Stat. 241) and Department of Defense directive 5500.11 issued pursuant to and published in Part 300 of Title 32, Code of Federal Regulations.
- f. Assume responsibility for all costs in excess of the Federal cost limitation of \$500,000. Current Federal costs are estimated at \$54,500, including pre-authorization costs.
- g. Provide 25 percent of the total project costs (excluding pre-authorization study costs), including necessary project lands, easements and rights-of-way. The total non-Federal contribution is currently estimated at \$14,000, including an estimated \$1,000 for lands, easements and rights-of-way.

RECOMMENDATION I recommend that this report be approved as the basis for the preparation of plans and specifications for construction of the proposed project under the authority contained in Section 14 of the 1946 Flood Control Act. It is further recommended that the Division Engineer, New England Division, be designated the approval authority for the construction plans and specifications.



Thomas A. Rhen
Colonel, Corps of Engineers
Division Engineer

30 Aug 87
Date

APPENDICES

A. ENVIRONMENTAL REVIEW

B. CORRESPONDENCE

DRAFT

Environmental Review

and

Section 404(b)(1) Evaluation

Section 14

Emergency Streambank Protection

Perley Brook

Fort Kent, Maine

Prepared by:

Elizabeth A. Parfenuk
Biologist

August 1987

New England Division
U.S. Army Corps of Engineers
Waltham, Massachusetts

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Proposed Project Description:

Streambank protection is being recommended for a site located adjacent to the Maine Route 161 highway embankment along Perley Brook in Fort Kent, Maine. The specific problem site is located adjacent to Route 161 at the upstream culvert entrances. Erosion of the north bank is caused by high water flows, ice action, and sediment deposits in the channel.

The selected plan calls for construction of stone revetment along 100 linear feet of a 6 to 10 foot high embankment adjacent to Route 161. The slope protection would extend upstream along private property to prevent future erosion from extending around the protection and endangering an adjacent highway area. Stone protection was designed for the site based on the 50-year flood event. The slope protection would be placed on a 1 to 2 slope. The stone protection would be 2 feet by 6 inches thick while the stone bedding and gravel bedding layers would be one foot thick.

In addition to the rock protection, the proposed plan would also include the excavation of four river shoal areas in order to provide a better stream alignment. Two of the shoals are located adjacent to the left and right river banks, about 15 feet and 200 feet upstream of the Route 161 culverts, respectively. The two principal shoaled areas are about 10 feet wide by 40 feet long and 2 to 4 feet high. Excavation would direct flows toward the two corrugated metal culverts under Route 161.

Removal of the deposition would involve the clearing of small trees and brush that have grown in these areas in recent years. Two smaller shoals are located in the river just upstream of the culvert entrances and are primarily composed of river sands and gravels. They could be used as random fill in the erosion area. This plan would not only protect the highway embankment, but also the adjacent residential property. Construction is scheduled to begin in the summer of 1988. The project should be completed within two weeks of the six month construction period.

Fort Kent is located just south of the Canadian border in Aroostook County, Maine. Perley Brook is approximately 55 feet wide at the proposed project site, and as a tributary, is located near the Fish River which runs through northern Maine. (See Figures 1 and 2.)

Purpose and Need:

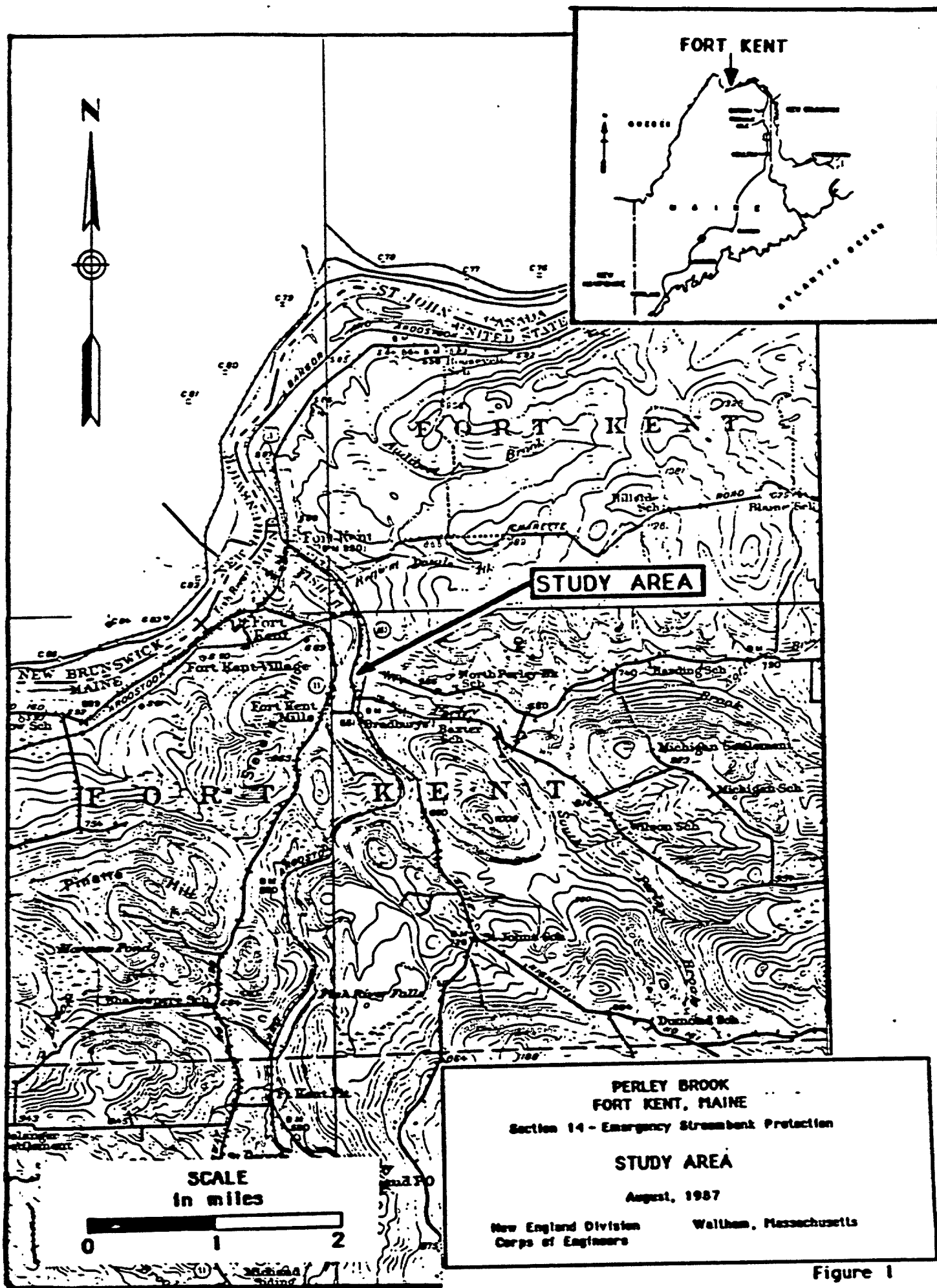
This report was accomplished under the special continuing authority contained in Section 14 of the 1946 Flood Control Act, as amended. Section 14 allows the Corps of Engineers to participate in the construction of economically justified streambank erosion control projects when public facilities are endangered by erosion. This emergency streambank protection project was requested by the State of Maine Department of Transportation and the Fort Kent Town Manager.

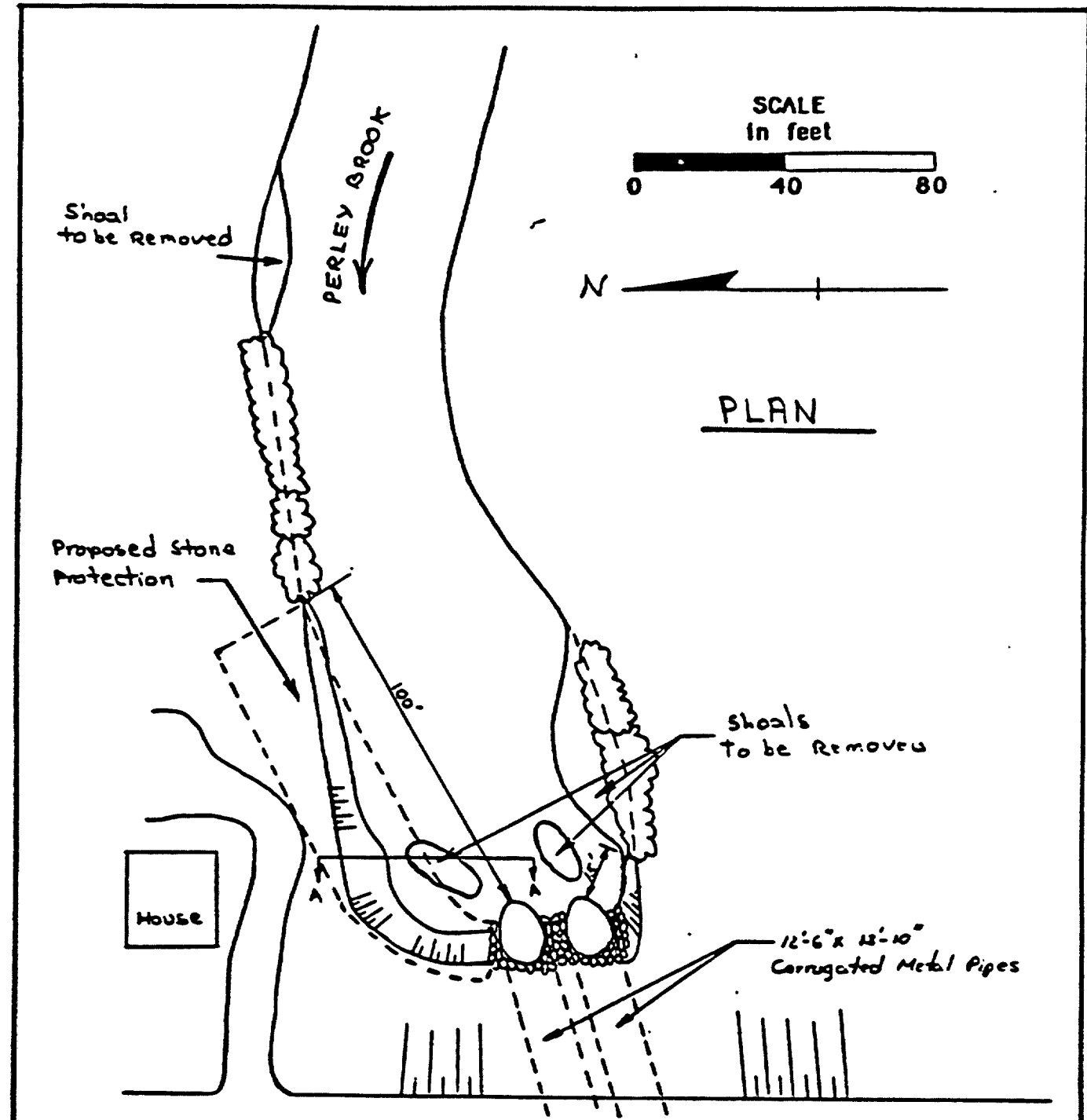
Alternatives:

No Action: There are mainly two reasons why the erosion has occurred and will continue if protective measures are not acted upon. First, the entrance to the highway culverts is not direct and streamflows are directed toward the problem area before entering the culverts. This also causes shoaling to partially block the culvert entrances thereby accelerating the erosion condition. Secondly, about 300 feet upstream from the culverts, Perley Brook makes a 90 degree turn. Here riverbank materials from an exposed 40 foot high embankment are eroded and carried to two separate areas where they are deposited adjacent to the riverbank. This causes the stream to make an "S" bend before entering the culverts.

The bank of the brook would deteriorate to the point where it would start affecting the integrity of the highway itself and endangering residential property. Therefore, this alternative is not feasible due to the destructive damages which would result from a no action alternative.

Stone Slope Protection: This type of protection would consist of placement of a layer of graded stone on a layer of bedding materials. The existing right bank would be sloped and some of the excavated materials from the shoaled area on the left bank would be utilized as fill under the stone slope protection. The protection would be 100 feet long and 6 to 10 feet high. It is estimated that 150 cubic yards of material would be taken from four shoaled areas. Most of this material would be hauled to an appropriate disposal area. Providing stone slope protection to prevent erosion and loss of the roadway was determined to be the least costly plan. Therefore, this plan was evaluated further to determine its effect on environmental resources.








RT. 161

TO FORT KENT

LEGEND

-  EXISTING STONE PROTECTION
-  SECTION LINE
-  LIMIT OF PROPOSED Stone Protection

PERLEY BROOK
FORT KENT, MAINE
 Section 14 - Emergency Streambank Protection
EROSION CONTROL PLAN
 August, 1987
 New England Division Wallham, Massachusetts
 Corps of Engineers

Figure 2

Precast Concrete Modular Wall: This method consists of stacking hollow, precast concrete modular sections along the eroded bank. A concrete footing would be constructed and two 4 foot high modular units would be stacked to protect the 10 foot high embankment. Backfill would primarily consist of gravel materials taken from the excavated shoaled areas. The protection would be 100 feet long.

Precast Concrete Grid Blocks: This alternative calls for blocks that would be placed on a 1 vertical to 2 horizontal slope, similar to the stone slope protection configuration after reshaping the bank and adding fill from the nearby shoal areas. In addition, the channel would be excavated to a depth of 3 feet at the base of the slope to provide for rock toe protection. The grid blocks would be placed on a filter material or gravel bedding.

Gabions: Rock filled wire baskets that are wired together to form a permeable barrier for erosion control were also considered. They would be stacked to a height of 8 to 10 feet similar to the modular wall construction previously described. Also, fill would be placed behind the gabions.

Environmental Setting:

Water Quality: According to the Maine Department of Environmental Protection (personal communication with Mr. John Soles, December 30, 1986), Perley Brook is managed as a class B water body, but does not necessarily maintain this status. Samples taken in July and August of 1984, showed that on two occasions the water tested as class B, on one occasion the standard for class B was exceeded, and on a fourth occasion, the standard was met at the borderline reading. Temperature measurements in the area indicate that the highest temperature recorded was taken in mid August where the thermometer reached 19°C or 66°F. Dissolved oxygen readings for the brook have also been taken. Bacteria readings are high for the brook. This could be due to high levels of runoff, sewage, or the activity of mammals. High turbidity is associated with the brook. It has been conjectured that this aspect may be due to forestry activities, poor road construction, or urban runoff. This high turbidity has been a great factor in the erosion rate. In addition, no licensed discharge to the brook is permitted that would impair aquatic life. Most of the benthic macroinvertebrate species sampled in this area consist of insects. The area is not recommended for swimming.

Aquatic Habitat: Perley Brook is formed by the North and South Branches about one mile upstream from its confluence with the Fish River. The problem site is located about 500 feet upstream from the Fish River confluence where Perley Brook passes under State Highway 161 (Market Street) in two (10 foot by 13 foot) corrugated metal culverts. The total drainage area of Perley Brook is about 16 square miles.

Studies done by the Maine Department of Inland Fisheries and Wildlife (Ashland, Maine) in 1964 and 1971, produced the following data on fish species inhabiting the project area:

Main Branch - Perley Brook

(July 2, 1964)

375 foot section in Fort Kent

Salvelinus fontinalis brook trout - 27 (actual)

North Branch - Perley Brook

(July 29, 1971)

480 foot length, above the proposed project area,
upstream from Michigan Rope Bridge

Salvelinus fontinalis brook trout - 209 (estimate, all sizes)

375 foot length, just above its confluence with the South Branch

<i>Salvelinus fontinalis</i>	brook trout - 117 (estimate, all sizes)
<i>Catostomus commersoni</i>	white sucker
<i>Notropis cornutus</i>	common shiner
<i>Semotilus atromaculatus</i>	creek chub
<i>Semotilus margarita</i>	pearl dace
<i>Chrosomus erythrogaster</i>	redbellied dace
<i>Rhinichthys atratulus</i>	blacknose dace
<i>Cottus cognatus</i>	slimy sculpin

South Branch - Perley Brook

(July 30, 1971)

500 foot length, near its confluence with the North Branch

<i>Salvelinus fontinalis</i>	brook trout - 249 (estimate, all sizes)
<i>Salmo salar</i>	landlocked atlantic salmon (5" parr) (Introduced species, periodically stocked)
<i>Semotilus margarita</i>	pearl dace
<i>Rhinichthys atratulus</i>	blacknose dace
<i>Cottus cognatus</i>	slimy sculpin
<i>Catostomus commersoni</i>	white sucker

Wild populations of brook trout do spawn in the project area, and therefore, it has been requested that instream work be performed during periods of low flow. This brook experiences low flows during July and August.

Terrestrial Habitat: The highway embankment is grassy, while the banks of the brook support about a quarter acre of shrubs and small trees. Plant species in and around the project area include the following:

<i>Chrysanthemum leucanthemum</i>	oxeye daisy
<i>Trifolium repens</i>	white clover
<i>Taraxacum officinale</i>	common dandelion
<i>Castilleja coccinea</i>	indian paintbrush
<i>Rubus occidentalis</i>	black raspberry
<i>Rubus allegheniensis</i>	common blackberry
<i>Alopecurus spp.</i>	foxtail
<i>Salix spp.</i>	willow
<i>Alnus spp.</i>	alder
<i>Betula populifolia</i>	gray birch
<i>Betula papyrifera</i>	american white birch
<i>Betula lutea</i>	yellow birch
<i>Populus tremuloides</i>	quaking aspen
<i>Populus grandidentata</i>	bigtooth aspen
<i>Acer rubrum</i>	red maple
<i>Tsuga canadensis</i>	eastern hemlock
<i>Pinus strobus</i>	white pine
<i>Abies balsamea</i>	balsam fir
<i>Picea glauca</i>	white spruce
<i>Picea rubens</i>	red spruce

The surrounding project area is composed of various forest communities which are used as timber land. Carnivores common in spruce-fir areas include black bear (*Ursus americanus*), marten (*Martes americana*), fisher (*M. pennanti*), and bobcat (*Lynx rufus*). Black bears associate with remote areas of spruce-fir and hardwood forest communities. Martens and fishers require a large dense coniferous forest habitat. Bobcats occupy dense second growth spruce-fir forests broken by clearings and wetlands.

Common rodents include red squirrel (*Tamiasciurus hudsonicus*) and shorttail shrew (*Blarina brevicauda*). Bird species likely to occur in surrounding areas are Swainson's thrush (*Catharus ustulata*), warblers (*Dendroica spp.*), white-throated sparrow (*Zonotrichia albicollis*), yellow-bellied flycatcher (*Empidonax flaviventris*), common crow (*Corvus brachyrhynchos*), and chickadee (*Parus spp.*).

The immediate project area is considered a developed area. Developed areas do not typically provide significant areas of habitat for wildlife. Wildlife species adapted to this type of area include norway rat (*Rattus norvegicus*), house mouse (*Mus musculus*), and rock dove (*Columba livia*).

Water resource lands include raccoon (*Procyon lotor*) found in bottomland hardwood habitats, mink (*Mustela vison*), and river otter (*Lutra canadensis*). The white-tailed deer (*Odocoileus virginianus*) often uses these areas for feeding and as wintering grounds.

There are no federal wildlife refuges or preserves within the Fish River Basin. There are no municipal, State, or national parks or recreational areas managed for wildlife within the project area. The State of Maine does not maintain any wildlife management areas within the Fish River Basin.

Threatened/Endangered Species: According to a review by the U.S. Fish and Wildlife Service, no Federally listed or proposed threatened or endangered species are known to exist in the immediate project area. The furbish lousewort, (*Pedicularis furbishiae*), is a Federally listed endangered species that occurs along portions of the St. John River (L.M. Eastman, "Rare and Endangered Vascular Plant Species in Maine," 1978). Thirty-one rare species occur in the St. John Valley.

Ms. Naomi Edelson of Maine's Critical Areas Program has stated that there appears to be no record of any rare plants in the proposed project area based upon the Critical Areas Data Base. Therefore, it has been concluded that the endangered species, furbish lousewort, does not exist in the proposed project area.

Cultural Resources: There are no known archaeological or historical resources in the project area.

Environmental Impacts:

Water Quality: Due to the large size of the sediments to be excavated from Perley Brook, it is not expected that there will be a significant alteration in water quality. To protect water quality, contact of construction equipment with the brook should be kept to a minimum, and proper erosion control measures, such as hay bales, should be used during construction to lessen siltation effects.

Aquatic Habitat: The Maine Department of Inland Fisheries and Wildlife (personal communication, Mr. Dave Basley, January 5, 1987), suggested that instream work be done during the low flow months of July and August. This was requested in order to avoid potential adverse impacts to the wild populations of brook trout that spawn in the proposed project area. At maximum the stabilizing stone toe of the protection will replace a little more than half of the existing width of the brook bed.

Terrestrial Habitat: According to the Maine Department of Inland Fisheries and Wildlife (personal communication, Mr. Mark Stadler, January 6, 1987), the proposed project should not cause any problems for the area's wildlife. Any wildlife inhabiting or passing through the project area should be able to avoid construction activities by either temporarily or permanently relocating to adjacent, unoccupied habitat. There is sufficient similar habitat nearby for wildlife to move to during the actual two week construction period. The project area is not cited as a critical area for deer since it is located in a suburban setting.

Vegetation will be removed along the bank of the brook in order to build the slope protection. The disrupted area will include slightly more than 100 linear feet of the bank. Air and noise quality impacts from construction equipment will be minimal. The aesthetic balance of the area will be slightly disrupted by the addition of slope protection. However, the bank area at present includes much eroding, bare, gravel sections that have a similar appearance to slope protection.

Threatened/Endangered Species: Although stating that it is a remote possibility that any threatened or endangered species occur in the proposed project area, the U.S. Fish and Wildlife Service requested that the Corps accompany them in a botanical survey of the proposed work area to uncover any Federally listed species. (See correspondence dated January 12, 1987.)

It was found after extensive coordination with Ms. Naomi Edelson of Maine's Critical Areas Program that the species of concern, the endangered furbish lousewort, no longer exists in the proposed project area. (See correspondence dated July 16, 1987.) Therefore, a botanical survey is no longer required to locate the plant.

Cultural Resources: It is unlikely that any historic or prehistoric archaeological properties will be located in the project area. The project area is very limited, and is located along a very active streambank. In addition, several professional archaeological surveys have been conducted in the project vicinity along the Fish River Valley, and none have located any prehistoric sites along the river (Dr. Art Speiss, personal communication, January 16, 1987). A letter of concurrence dated February 11, 1987, from the Maine State Historic Preservation Commission is included in the pertinent correspondence section.

Mitigation:

In order to protect wild populations of brook trout, instream construction work should be limited to the months of July and August. The following measures to protect water quality should be included in the project specifications: contact of construction equipment with the brook should be kept to a minimum, vegetation should be removed only where necessary to avoid greatly disturbing terrestrial habitat, and proper erosion control measures should be taken during construction (especially against highway runoff) to avoid adverse siltation impacts to water quality and the aquatic habitat.

A survey for the endangered species, furbish lousewort (*Pedicularis furbishiae*), will not be required due to information obtained from the Maine State Planning Office (Critical Areas Program) which has determined that the plant is no longer present in the proposed project area.

Coordination:

Various State and Federal agencies were contacted during preparation of this Environmental Review:

U.S. Fish and Wildlife Service, Mr. Ron Joseph, January 7, 1987, Concord, New Hampshire.

Maine Department of Environmental Protection, Mr. John Soles, December 30, 1986, Augusta, Maine.

Maine Department of Inland Fisheries and Wildlife, Mr. Dave Basley, January 5, 1987, and Mr. Mark Stadler, January 6, 1987, Ashland, Maine.

Maine State Planning Office, Critical Areas Program, Ms. Naomi Edelson, July 1 and 8, 1987.

Maine Historic Preservation Office, Augusta, Maine.

References:

Baum, Edward T., Atlantic Sea Run Salmon Commission, Aroostook, Meduxnekeag, Prestile, and Upper St. John: River Management Report, State of Maine, Bangor, Maine, 1982.

Department of the Army, New England Division, Corps of Engineers, Fish River Basin: Environmental Reconnaissance Study, Waltham, Massachusetts, August 1985.

Woodward - Clyde Consultants, "Preliminary Background Report for Bald Mountain Project, Aroostook County, Maine," Volume I, 1980.

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS, WALTHAM, MA
SECTION 404(b)(1) EVALUATION

PROJECT: Emergency Streambank Protection, Perley Brook, Fort Kent, Maine

PROJECT MANAGER: Bill Swaine EXT. 7532

FORM COMPLETED BY: Betty Parfenuk EXT. 7536

PROJECT DESCRIPTION:

Streambank protection is proposed for a site located adjacent to the Maine Route 161 highway embankment along Perley Brook in Fort Kent, Maine. The specific problem site is located adjacent to Route 161 at the upstream culvert entrances.

The currently proposed plan of improvement includes placement of about 100 linear feet of stone slope protection along the embankment. This plan would not only protect the highway embankment, but also adjacent residential property. Additional work includes the excavation of four nearby shoaled areas in order to provide a better stream alignment. Excavation would direct flows toward the two corrugated metal culverts under Route 161.

Fort Kent is located just south of the Canadian border in Aroostook County, Maine. Perley Brook is approximately 30 feet wide at the proposed project site, and is located near the Fish River which runs through northern Maine.

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS, WALTHAM, MA

PROJECT: Emergency Streambank Protection, Perley Brook, Ft. Kent, Maine

SHORT FORM
Evaluation of Section 404(b)(1) Guidelines

1. Review of Compliance Sect. 230.10(a)-(d). Preliminary 1/ Final 2/

A review of the permit application indicated that:

- a. The discharge represents the least environmentally damaging practicable alternative and if a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose unless there are no practicable alternatives to the proposed activity. (If no, see section 2 and information gathered for EA alternative);

YES X NO *

YES NO **

- b. The activity does not appear to 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA: 2) jeopardize the existence of Federally listed endangered or threatened species or their habitat: and 3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);

YES X NO

YES NO

* page 14; footnote 1
** page 14; footnote 2

- c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2)

YES X NO

YES NO

- d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).

YES X NO
Proceed
to Sec.2

YES NO
Proceed
to Sec.6

2. Technical Evaluation Factors (Subparts C-F)

N/A

Not Signifi-
cant

Signifi-
cant*

a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).

- 1) Substrate impacts.
- 2) Suspended particulates/turbidity impacts.
- 3) Water column impacts.
- 4) Alteration of current patterns and water circulation.
- 5) Alteration of normal water fluctuations/hydroperiod.
- 6) Alteration of salinity gradients.

X
X
X
X
X
X
X

b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).

- 1) Effect on threatened/endangered species and their normal habitat.
- 2) Effect on the aquatic food web.
- 3) Effect on other wildlife (mammals, birds, reptiles and amphibians).

X
X
X

Proceed to Section 3
* page 15; footnote 3

c. Special Aquatic Sites (Subpart E).

N/A Not Signifi- Signifi-
cant cant

- 1) Sanctuaries and refuges.
- 2) Wetlands.
- 3) Mud flats.
- 4) Vegetated shallows.
- 5) Coral reefs.
- 6) Riffle and pool complexes.

X	_____
X	_____
X	_____
X	_____
X	_____
X	_____

d. Human Use Characteristics (Subpart F).

- 1) Effects on municipal and private water supplies.
- 2) Recreational and Commercial fisheries impacts.
- 3) Effects on water-related recreation.
- 4) Aesthetic impacts.
- 5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites and similar preserves.

X	_____
X	_____
X	_____
X	_____
X	_____

Remarks: Explanation of identified significant impacts.

3. Evaluation of Dredged or Fill Material (Subpart G).

- a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

- | | |
|---|----------|
| 1) Physical characteristics..... | <u>X</u> |
| 2) Hydrography in relation to known or anticipated sources of contaminants..... | _____ |
| 3) Results from previous testing of the material or similar material in the vicinity of the project..... | _____ |
| 4) Known, significant sources of persistent pesticides from land runoff or percolation..... | _____ |
| 5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances..... | _____ |
| 6) Other public records of significant introduction of contaminants from industries, municipalities or other sources..... | _____ |

- 7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment By man-induced discharge activities.....
- 8) Other sources (specify).....

List appropriate references.

- b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

YES X NO *

4. Disposal Site Delineation Sect. 230.11(f).

a. The following factors as appropriate, have been considered in evaluating the disposal site.

- 1) Depth of water at disposal site.....
- 2) Current velocity, direction and variability at disposal site.....
- 3) Degree of turbulence.....
- 4) Water column stratification.....
- 5) Discharge vessel speed and direction.....
- 6) Rate of discharge.....
- 7) Dredged material characteristics (Constituents, amount and type of material, settling velocities).....
- 8) Number of discharges per unit of time.....
- 9) Other factors affecting rates and patterns of mixing (specify).....

Proceed to Section 4
* page 15; footnote 4

List appropriate references.

No water related disposal site will be used.
The material will be excavated and trucked to a suitable upland site.

- b. An evaluation of the appropriate factors in 4a above indicated that our disposal site and/or size of mixing zone are acceptable.

YES X NO

5. Actions to Minimize Adverse Effects (Subpart II).

All appropriate and practicable steps have been taken, through application of recommendation of Sect. 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

YES NO *

List actions taken

No discharge will result.

6. Factual Determination (Sect. 230.11).

All review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short or long-term environmental effects of the proposed discharge as related to:

- a. Physical substrate at the disposal site (review section 2a, 3, 4, and 5 above).
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).
c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5)
d. Contaminant availability (review sections 2a, 3, and 4)
e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5)
f. Disposal site (review sections 2, 4, and 5)
g. Cumulative impact on the aquatic ecosystem.
h. Secondary impacts on the aquatic ecosystem.

YES X NO *

YES X NO *

YES X NO *

YES X NO *

YES X NO *

YES X NO *

YES X NO *

YES X NO *

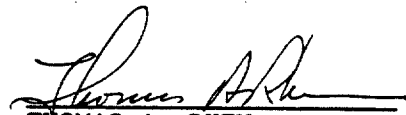
Return to Section 1 for final compliance review.

* page 15; footnote 5

7. Findings.

- a. The proposed disposal site for discharge of dredged or fill material complies with Section 404(b)(1) guidelines..... X
- b. The proposed disposal site for discharge of dredged or fill material complies with Section 404(b)(1) guidelines with the inclusion of the following conditions.....
- c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):
- 1) There is a less damaging practicable alternative.....
- 2) The proposed discharge will result in significant degradation of the aquatic ecosystem.....
- 3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem.....

30 Aug 87
DATE


THOMAS A. RHEN
Colonel, Corps of Engineers
Division Engineer

FOOTNOTES:

- 1) Negative responses to three or more of the compliance criteria at this stage indicates that the proposed projects may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2 a-e, below before completing the final review of compliance.
- 2) Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision making process, the "short-form evaluation process is inappropriate".

- 3) A significant response indicates that the proposed project may not be in compliance with the Section 404(b)(1) Guidelines.
- 4) If the dredged or fill material cannot be excluded from the individual testing, the "short form" evaluation process is inappropriate.
- 5) A negative response indicates that the proposed project does not comply with the guidelines.



STATE OF MAINE
EXECUTIVE DEPARTMENT
STATE PLANNING OFFICE

JOHN R. MCKERNAN, JR.
GOVERNOR

RICHARD H. SILKMAN
DIRECTOR

July 16, 1987

Betty Parfenuk
Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

RE: Emergency Streambank Protection Project (Section 14)

Dear Ms. Parfenuk,

In response to your request regarding rare plants, especially Furbish's Lousewort, along the Perley Brook, Fort Kent, Aroostook County, I have checked the Critical Areas Data Base.

The Data Base includes the:

- 1) Register of Critical Areas
- 2) Natural Areas Inventory
- 3) Field checked potential Critical Areas
- 4) Nominated Critical Areas
- 5) Rare Vascular Plants of Maine
- 6) National Natural Landmark
- 7) Critical Habitats

There appears to be no record of any rare plants based upon the Critical Areas Data Base. Please do not hesitate to contact me if you have further questions about the Critical Areas Program.

Sincerely,

A handwritten signature in cursive script that reads "Naomi A. Edelson".

Naomi A. Edelson, Biologist
Critical Areas Program



MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

February 11, 1987

Mr. Joseph Ignazio
Army Corps of Engineers
424 Trapelo Road
Boston, Massachusetts 02254-9149

re: Perley Brook Emergency Streambank Protection, Ft. Kent, Maine


Dear Mr. Ignazio:

My staff has reviewed the location of the proposed Perley Brook emergency streambank protection project.

I find that this project will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.

If I can be of further assistance concerning this matter, please do not hesitate to let me know.

Sincerely,


Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/slm



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

Mr. Joseph L. Ignazio
Chief, Planning Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

JAN 12 1987

Dear Mr. Ignazio:

This responds to your December 31, 1986 request for information on the presence of Federally listed and proposed endangered or threatened species within the impact area of the Emergency Streambank Protection Project along Perley Brook in Fort Kent, Maine.

Our review shows that no Federally listed or proposed threatened and endangered species under our jurisdiction are known to exist in the immediate project area. The furbish lousewort, a Federally listed endangered species, occurs along portions of the St. John River. According to L.M. Eastman's 1978 publication, "Rare and Endangered Vascular Plant Species in Maine," 31 rare species occur in the St. John Valley....

Although it is remote that any of these species occur in the vicinity of your proposed work on Perley Brook, we encourage you to coordinate an interagency botanical survey next spring. A field survey of the project area prior to streambank protection work would insure that no rare plants are destroyed. We also suggest you contact Mr. Hank Tyler of the Maine Critical Areas Program and the Ashland Office of the Maine Department of Inland Fisheries and Wildlife for information on fisheries and wildlife.

No Biological Assessment or further consultation is required with us under Section 7 of the Endangered Species Act at this time. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to endangered species under our jurisdiction. It does not address other legislation or our concerns under the Fish and Wildlife Coordination Act.

A list of Federally designated endangered and threatened species in Maine is enclosed for your information. Thank you for your cooperation and please contact us if we can be of further assistance.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor
New England Area

Enclosure

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MAINE

Common Name	Scientific Name	Status	Distribution
<u>FISHES:</u>			
Sturgeon, shortnose*	<u>Acipenser brevirostrum</u>	E	Kennebec River & Atlantic Coastal Waters
<u>REPTILES:</u>			
Turtle, leatherback*	<u>Dermochelys coriacea</u>	E	Oceanic summer resident
Turtle, loggerhead*	<u>Caretta caretta</u>	T	Oceanic summer resident
Turtle, Atlantic ridley*	<u>Lepidochelys kempii</u>	E	Oceanic summer resident
<u>BIRDS:</u>			
Eagle, bald	<u>Haliaeetus leucocephalus</u>	E	Entire state - nesting habitat
Falcon, American peregrine	<u>Falco peregrinus anatum</u>	E	Entire state-reestab- lishment to former breeding range in progress
Falcon, Arctic peregrine	<u>Falco peregrinus tundrius</u>	E	Entire state migratory- no nesting
Plover, Piping	<u>Charadrius melodus</u>	T	Entire State - nesting habitat
<u>MAMMALS:</u>			
Cougar, eastern	<u>Felis concolor cougar</u>	E	Entire state - may be extinct
Whale, blue*	<u>Balaenoptera musculus</u>	E	Oceanic
Whale, finback*	<u>Balaenoptera physalus</u>	E	Oceanic
Whale, humpback*	<u>Megaptera novaeangliae</u>	E	Oceanic
Whale, right*	<u>Eubalaena spp. (all species)</u>	E	Oceanic
Whale, sei*	<u>Balaenoptera borealis</u>	E	Oceanic
Whale, sperm*	<u>Physeter catodon</u>	E	Oceanic
<u>MOLLUSKS:</u>			
NONE			
<u>PLANTS:</u>			
Small Whorled Pogonia	<u>Isotria meleoloides</u>	E	Kennebec, Cumberland, Oxford Counties
Lousewort, Furbish's	<u>Pedicularis furbishiae</u>	E	Aroostook County

* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service

FEDERALLY PROPOSED ENDANGERED AND THREATENED SPECIES
IN MAINE

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>	<u>Distribution</u>
Roseate Tern	<u>Sterna dougallii dougallii</u>	Proposed as Endangered 11/4/86	Statewide

Determination that this species is endangered would make it eligible for the protection provided by Section 7 of the Endangered Species Act of 1973, as amended. Proposed species are offered limited protection under Section 7(a)(4), which requires Federal agencies to confer with the Service on actions which may jeopardize the proposed species.



DEPARTMENT OF

INLAND FISHERIES AND WILDLIFE

284 STATE STREET
STATE HOUSE STATION 41
AUGUSTA, MAINE 04333

GLENN H. MANUEL
COMMISSIONER

NORMAN E. TRASK
DEPUTY COMMISSIONER

January 6, 1987

Wildlife Division
MDIF&W
P.O. Box 416
Ashland, Maine 04732

Betty Parsenuk
U.S. Army Engineers
424 Trapelo Road
Bldg. 113 North
Waltham, MA 02254

Betty:

Enclosed are the bird and mammal lists which Woodward-Clyde developed as part of the environmental assessment for the Bald Mountain mining project in T12 R8, Wels, Aroostook County. They should be indicative of the species endemic to the Perley Brook Watershed in Fort Kent.

Have you reviewed the "Draft Plan-Environmental Assessment" dated April 1, 1986 for the Perley Brook Watershed prepared by the St. John Valley Soil and Water Conservation District in Fort Kent? Do these documents reflect the current scope and design of this project? If not, then we should be notified so that Dave Basley and I may reconsider our fisheries and wildlife concerns.

Sincerely,

Mark Stadler
Regional Wildlife Biologist

MS/lS

Table 4-8. MAMMAL SPECIES LIKELY TO OCCUR IN THE VICINITY OF THE
BALD MOUNTAIN MINE SITE (Page 1 of 3).¹

Species	Observed by WCC
Masked shrew	X ²
<u>Sorex cinereus cinereus</u>	
Water shrew	
<u>Sorex palustris albibarbis</u>	
Smoky shrew	
<u>Sorex dispar dispar</u>	
Long-tailed shrew	
<u>Sorex dispar dispar</u>	
Thompson's pygmy shrew	X
<u>Sorex hoyi</u>	
Short-tailed shrew	X
<u>Blarina brevicauda</u>	
Star-nosed mole	
<u>Condylura cristata</u>	
Little brown myotis	
<u>Myotis lucifugus</u>	
Keen's myotis	
<u>Myotis keenii septentrionalis</u>	
Silver-haired bat	
<u>Lasionycteris noctivagans</u>	
Big brown bat	
<u>Eptesicus fuscus</u>	
Red bat	
<u>Lasiurus borealis</u>	
Hoary bat	
<u>Lasiurus cinereus</u>	
Snowshoe hare	X
<u>Lepus americanus</u>	
Eastern chipmunk	X
<u>Tamias striatus</u>	
Woodchuck	X
<u>Marmota monax</u>	
Gray squirrel	
<u>Sciurus carolinensis pennsylvanicus</u>	
Red squirrel	X
<u>Tamiasciurus hudsonicus</u>	
Northern flying squirrel	
<u>Glaucomys sabrinus macrotis</u>	
Beaver	X
<u>Castor canadensis</u>	
Deer mouse	X
<u>Peromyscus maniculatus</u>	
Gapper's red-backed vole	X
<u>Clethrionomys gapperi</u>	

Table 4-8. MAMMAL SPECIES LIKELY TO OCCUR IN THE VICINITY OF THE
BALD MOUNTAIN MINE SITE¹, Continued (Page 2 of 3).

Species	Observed by WCC
Meadow vole	X
<u>Microtus pennsylvanicus</u>	
Rock vole	
<u>Microtus chrotorrhinus</u>	
Muskrat	
<u>Ondatra zibethicus</u>	
Southern bog lemming	
<u>Synaptomys cooperi</u>	
Northern bog lemming	
<u>Synaptomys borealis sphagnicola</u>	
Norway rat	
<u>Rattus norvegicus</u>	
House mouse	
<u>Mus musculus</u>	
Meadow jumping mouse	
<u>Zapus hudsonius</u>	
Woodland jumping mouse	X
<u>Napaeozapus insignis</u>	
Porcupine	
<u>Erethizon dorsatum dorsatum</u>	
Coyote	
<u>Canis latrans</u>	
Red fox	
<u>Vulpes vulpes</u>	
Black bear	X
<u>Ursus americanus</u>	
Raccoon	X
<u>Procyon lotor</u>	
Marten	
<u>Martes americana americana</u>	
Fisher	
<u>Martes pennanti pennanti</u>	
Ermine	
<u>Mustela erminea cicognanii</u>	
Long-tailed weasel	
<u>Mustela frenata</u>	
Mink	
<u>Mustela vison</u>	
Striped skunk	
<u>Mephitis mephitis nigra</u>	

Table 4-8. MAMMAL SPECIES LIKELY TO OCCUR IN THE VICINITY OF THE
BALD MOUNTAIN MINE SITE¹, Concluded (Page 3 of 3).

Species	Observed by WCC
River otter	
<u>Lutra canadensis</u>	
Lynx	
<u>Lynx canadensis</u>	
Bobcat	
<u>Lynx rufus</u>	
White-tailed deer	X
<u>Odocoileus virginianus borealis</u>	
Moose	X
<u>Alces alces americana</u>	

¹Source: Godin (1977).

²X = Indicates species or its sign observed during field surveys.

TABLE 4-4. BIRD SPECIES WHICH MAY OCCUR IN THE BALD MOUNTAIN SITE REGION (Page 1 of 5).

Family and Species ¹	Occurrence in Maine ²	Occurrence in Aroostook County ³	Occurrence in Site Vicinity ⁴
Columbidae - Loons	P-B	S	X
Common loon (<i>Gavia immer</i>)	P	-	3
Red-throated loon (<i>Gavia stellata</i>)			
Podicipedidae - Grebes	U	-	2
Red-necked grebe (<i>Podiceps grisegena</i>)	U	1	2
Horned grebe (<i>Podiceps auritus</i>)	S-B	S	2
Pied-billed grebe (<i>Podilymbus podiceps</i>)			
Phalacrocoracidae - Cormorants	V	1	3
Double-crested cormorant (<i>Phalacrocorax auritus</i>)	P	-	3
Great cormorant (<i>Phalacrocorax carbo</i>)			
Ardeidae - Herons and Bitterns	S-B	S	X
Great blue heron (<i>Ardea herodias</i>)	S-B	-	2
Green heron (<i>Butorides striatus</i>)	V	-	3
Cattle egret (<i>Bubulcus ibis</i>)	V	-	3
Great egret (<i>Casmerodius albus</i>)	S-B	-	2
Snowy egret (<i>Egretta thula</i>)	S-B	S	2
Black-crowned night heron (<i>Nycticorax nycticorax</i>)	S-B	-	2
Least bittern (<i>Ixobrychus exilis</i>)	S-B	S	2
American bittern (<i>Botaurus lentiginosus</i>)			
Anatidae - Swans, Geese, and Ducks	P-B	M	2
Canada goose (<i>Branta canadensis</i>)	T	-	3
Brant (<i>Branta bernicla</i>)	T	-	2
Snow goose (<i>Chen caerulescens</i>)	U	M	2
Mallard (<i>Anas platyrhynchos</i>)	P-B	S	2
Black duck (<i>Anas rubripes</i>)	T	1	2
Cadwall (<i>Anas strepera</i>)	U	-	2
Pintail (<i>Anas scuta</i>)	S-B	M	2
American green-winged teal (<i>Anas crecca</i>)	S-B	M	2
Blue-winged teal (<i>Anas discors</i>)	T	-	2
American wigeon (<i>Anas americana</i>)	S-B	M	2
Wood duck (<i>Aix sponsa</i>)	S-B	S	2
Ring-necked duck (<i>Aythya collaris</i>)	U	-	2
Greater scaup (<i>Aythya marila</i>)	U	-	2
Lesser scaup (<i>Aythya affinis</i>)	P-B	S	X
Common goldeneye (<i>Bucephala clangula</i>)	U	-	3
Barrow's goldeneye (<i>Bucephala islandica</i>)	P	-	3
Bufflehead (<i>Bucephala albeola</i>)	P	1	3
Oldsquaw (<i>Clangula hyemalis</i>)	U	-	3
Barlequin duck (<i>Histrionicus histrionicus</i>)	P-B	-	3
Common eider (<i>Somateria mollissima</i>)	U	-	3
King eider (<i>Somateria spectabilis</i>)	P	1	3
White-winged scoter (<i>Melanitta deglandi</i>)	P	-	3
Surf scoter (<i>Melanitta perspicillata</i>)	P	-	3
Black scoter (<i>Melanitta nigra</i>)	T	-	2
Ruddy duck (<i>Oxyura jamaicensis</i>)	S-B	1	X
Hooded merganser (<i>Lophodytes cucullatus</i>)	P-B	S	2
Common merganser (<i>Mergus merganser</i>)	P-B	1	2
Red-breasted merganser (<i>Mergus serrator</i>)			
Accipitridae - Hawks, Old World Vultures, and Harriers	P-B	P?	1
Goshawk (<i>Accipiter gentilis</i>)	P-B	S	1
Sharp-shinned hawk (<i>Accipiter striatus</i>)	P-B	S	1
Cooper's hawk (<i>Accipiter cooperii</i>)	P-B	1	X
Red-tailed hawk (<i>Buteo jamaicensis</i>)	P-B	1	1
Red-shouldered hawk (<i>Buteo lineatus</i>)	S-B	S	1
Broad-winged hawk (<i>Buteo platypterus</i>)	U	-	3
Rough-legged hawk (<i>Buteo lagopus</i>)	P-B	1	1
Golden eagle (<i>Aquila chrysaetos</i>)	P-B	S	1
Bald eagle (<i>Haliaeetus leucoccephalus</i>)	S-B	S	1
Mereh hawk (<i>Circus cyaneus</i>)			
Falconidae - Ospreys	P-B	S	X
Osprey (<i>Pandion haliaetus</i>)			
Falconidae - Caracaras and Falcons	S	-	1
Peregrine falcon (<i>Falco peregrinus</i>)	P	M	1
Merlin (<i>Falco columbarius</i>)	P	S	1
American kestrel (<i>Falco sparverius</i>)			
Trogonidae - Grouse and Ptarmigan	P-B	P	X
Ruffed grouse (<i>Bonasa umbellus</i>)	P-B	P	1
Spruce grouse (<i>Canachites canadensis</i>)			

TABLE 4-4. BIRD SPECIES WHICH MAY OCCUR IN THE BALD MOUNTAIN SITE REGION. Continued (Page 2 of 5).

Family and Species ¹	Occurrence in Maine ²	Occurrence in Aroostook County ²	Occurrence in Site Vicinity ³
Phasianidae - Quail, Pheasants and Peacocks			
Ring-necked pheasant (<i>Phasianus colchicus</i>)	P-B	-	3
Bobwhite (<i>Colinus virginianus</i>)	P-B	-	3
Rallidae - Rails, Gallinules, and Coots			
Virginia rail (<i>Rallus limicola</i>)	S-B	-	2
Sora (<i>Porzana carolina</i>)	S-B	I	2
Yellow rail (<i>Coturnicops noveboracensis</i>)	T	-	2
American coot (<i>Fulica americana</i>)	P	I	2
Charadriidae - Plovers, Turnstones, and Surfbirds			
Semipalmated plover (<i>Charadrius semipalmatus</i>)	S	I	2
Piping plover (<i>Charadrius melodus</i>)	S-B	-	3
Killdeer (<i>Charadrius vociferus</i>)	S-B	S	3
American golden plover (<i>Pluvialis dominica</i>)	T	-	3
Black-bellied plover (<i>Pluvialis squatarola</i>)	T	I	3
Ruddy turnstone (<i>Arenaria interpres</i>)	T	-	3
Scolopacidae - Woodcock, Snipe, and Sandpipers			
American woodcock (<i>Philohela minor</i>)	P-B	S	1
Common snipe (<i>Capella gallinago</i>)	P-B	S	3
Whimbrel (<i>Numenius phaeopus</i>)	T	-	2
Spotted sandpiper (<i>Actitis macularia</i>)	S-B	S	2
Solitary sandpiper (<i>Tringa solitaria</i>)	T	M	3
Greater yellowlegs (<i>Tringa melanoleuca</i>)	T	M	3
Lesser yellowlegs (<i>Tringa flavipes</i>)	T	I	3
Willet (<i>Catoptrophorus semipalmatus</i>)	S-B	-	3
Red knot (<i>Calidris canutus</i>)	T	-	3
Purple sandpiper (<i>Calidris maritima</i>)	W	-	3
Pectoral sandpiper (<i>Calidris melanotos</i>)	T	I	2
White-rumped sandpiper (<i>Calidris fuscicollis</i>)	T	I	2
Baird's sandpiper (<i>Calidris bairdii</i>)	T	-	3
Least sandpiper (<i>Calidris minutilla</i>)	T	M	3
Dunlin (<i>Calidris alpina</i>)	T	-	3
Semipalmated sandpiper (<i>Calidris pusilla</i>)	T	I	2
Western sandpiper (<i>Calidris mauri</i>)	T	-	3
Sanderling (<i>Calidris alba</i>)	T	-	3
Short-billed dowitcher (<i>Limodromus griseus</i>)	T	-	3
Hudsonian godwit (<i>Limosa haemastica</i>)	T	-	3
Phalaropodidae - Phalaropes			
Red phalarope (<i>Phalaropus fulicarius</i>)	T	-	3
Northern phalarope (<i>Lobipes lobatus</i>)	T	I	3
Stercorariidae - Jaegers and Skuas			
Pomarine jaeger (<i>Stercorarius pomarinus</i>)	S	-	3
Parasitic jaeger (<i>Stercorarius parasiticus</i>)	S	-	3
Long-tailed jaeger (<i>Stercorarius longicaudus</i>)	S	-	3
Laridae - Gulls and Terns			
Glaucous gull (<i>Larus hyperboreus</i>)	W	-	3
Iceland gull (<i>Larus glaucoides</i>)	W	-	3
Great black-backed gull (<i>Larus marinus</i>)	P-B	-	3
Herring gull (<i>Larus argentatus</i>)	P-B	I	2
Ring-billed gull (<i>Larus delawarensis</i>)	P	-	2
Black-headed gull (<i>Larus ridibundus</i>)	W	-	3
Laughing gull (<i>Larus stricilla</i>)	S-B	-	3
Bonaparte's gull (<i>Larus philadelphia</i>)	T	-	2
Little gull (<i>Larus minutus</i>)	W	-	3
Black-legged kittiwake (<i>Rissa tridactyla</i>)	P	-	3
Common tern (<i>Sterna hirundo</i>)	S-B	I	2
Arctic tern (<i>Sterna paradisaea</i>)	S-B	-	3
Roseate tern (<i>Sterna dougallii</i>)	S-B	-	3
Least tern (<i>Sterna albifrons</i>)	S-B	-	3
Caspian tern (<i>Sterna caspia</i>)	T	-	2
Black tern (<i>Chlidonias niger</i>)	S	-	2
Columba - Pigeons and Doves			
Rock dove (<i>Columba livia</i>)	P	-	3
Mourning dove (<i>Zenaidura macroura</i>)	P	I	1
Cuculidae - Cuckoos, Roadrunners, and Anis			
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	S-B	-	1
Black-billed cuckoo (<i>Coccyzus erythrophthalmus</i>)	S-B	-	1
Tytonidae - Barn Owls			
Barn owl (<i>Tyto alba</i>)	P-B	-	3

TABLE 4-4. BIRD SPECIES WHICH MAY OCCUR IN THE BALD MOUNTAIN SITE REGION. Continued (Page 3 of 5).

Family and Species ¹	Occurrence in Maine ²	Occurrence in Aroostook County ³	Occurrence in Site Vicinity ⁴
Strigidae - Typical Owls	P-B	P	3
Screech owl (<i>Otus asio</i>)	P-B	P	1
Great horned owl (<i>Bubo virginianus</i>)	W	W	1
Snowy owl (<i>Nyctes scandiaca</i>)	W	W	3
Hawk owl (<i>Surnia ulula</i>)	P-B	P	1
Barred owl (<i>Sirix varia</i>)	P-B	P	1
Long-eared owl (<i>Asio otus</i>)	P-B	P	1
Short-eared owl (<i>Asio flammeus</i>)	W	W	1
Boreal owl (<i>Aegolius funereus</i>)	P-B	P	1
Saw-whet owl (<i>Aegolius acadicus</i>)			
Caprimulgidae - Goatsuckers	S-B	S	1
Whip-poor-will (<i>Caprimulgus vociferus</i>)	S-B	S	1
Common nighthawk (<i>Chordeiles minor</i>)			
Apodidae - Swifts	S-B	S	1
Chimney swift (<i>Chaetura pelagica</i>)			
Trochilidae - Hummingbirds	S-B	S	X
Ruby-throated hummingbird (<i>Archilochus colubris</i>)			
Alcedinidae - Kingfishers	P-B	S	X
Belted kingfisher (<i>Megascops alcyon</i>)			
Picidae - Woodpeckers and Wrecks	P-B	S	X
Common flicker (<i>Colaptes auratus</i>)	P-B	P	1
Pileated woodpecker (<i>Dryocopus pileatus</i>)	P	I	1
Red-headed woodpecker (<i>Melanerpes erythrocephalus</i>)	S-B	S	X
Yellow-bellied sapsucker (<i>Sphyrapicus varius</i>)	P-B	P	X
Hairy woodpecker (<i>Picoides villosus</i>)	P-B	P	X
Downy woodpecker (<i>Picoides pubescens</i>)	P-B	P	X
Black-backed three-toed woodpecker (<i>Picoides arcticus</i>)	P-B	P	1
Northern three-toed woodpecker (<i>Picoides tridactylus</i>)			
Tyrannidae - Tyrant Flycatchers	S-B	S	1
Eastern kingbird (<i>Tyrannus tyrannus</i>)	S-B	I	1
Great crested flycatcher (<i>Myiarchus cinerascens</i>)	S-B	S	1
Eastern phoebe (<i>Sayornis phoebe</i>)	S	S	1
Yellow-bellied flycatcher (<i>Empidonax flaviventris</i>)	S	S	1
Alder flycatcher (<i>Empidonax alnorum</i>)	S	S	1
Least flycatcher (<i>Empidonax minimus</i>)	S	S	X
Eastern wood pewee (<i>Contopus virens</i>)	S	S	1
Olive-sided flycatcher (<i>Mniotiltus borealis</i>)			
Alaudidae - Larks	P	W	3
Horned lark (<i>Eremophila alpestris</i>)			
Hirundinidae - Swallows	S	S	1
Tree swallow (<i>Iridoprocne bicolor</i>)	S	S	3
Bank swallow (<i>Riparia riparia</i>)	X	-	1
Rough-winged swallow (<i>Stelgidopteryx ruficollis</i>)	S	S	X
Barn swallow (<i>Hirundo rustica</i>)	S	S	1
Cliff swallow (<i>Petrochelidon pyrrhonota</i>)	S	S	3
Purple martin (<i>Progne subis</i>)			
Corvidae - Jays, Magpies, and Crows	P	P	X
Gray jay (<i>Perisoreus canadensis</i>)	P	P	X
Blue jay (<i>Cyanocitta cristata</i>)	P	I	X
Common raven (<i>Corvus corax</i>)	P	S	X
Common crow (<i>Corvus brachyrhynchos</i>)			
Paridae - Titmice, Vireos, and Nuthatches	P	P	X
Black-capped chickadee (<i>Parus stricklandii</i>)	P	P	1
Boreal chickadee (<i>Parus hudsonicus</i>)	P	-	1
Tufted titmouse (<i>Parus bicolor</i>)			
Sittidae - Nuthatches	P	I	1
White-breasted nuthatch (<i>Sitta carolinensis</i>)	P	P	1
Red-breasted nuthatch (<i>Sitta canadensis</i>)			
Certhiidae - Creepers	P	I	1
Brown creeper (<i>Certhia familiaris</i>)			
Troglodytidae - Wrens	S	S	3
House wren (<i>Troglodytes aedon</i>)	S	S	X
Winter wren (<i>Troglodytes troglodytes</i>)	W	-	1
Carolina wren (<i>Thryothorus ludovicianus</i>)	S	-	2
Long-billed marsh wren (<i>Cistothorus palustris</i>)	S	-	2
Short-billed marsh wren (<i>Cistothorus platensis</i>)			

TABLE 4-4. BIRD SPECIES WHICH MAY OCCUR IN THE BALD MOUNTAIN SITE REGION, Continued (Page 4 of 5).

Family and Species ¹	Occurrence in Maine ²	Occurrence in Aroostook County ³	Occurrence in Site Vicinity ⁴
Mimidae - Mockingbirds and Thrashers			
Gray catbird (<i>Dumetella carolinensis</i>)	S	S	1
Brown thrasher (<i>Toxostoma rufum</i>)	S	-	1
Turdidae - Thrushes, Solitaires, and Bluebirds			
American robin (<i>Turdus migratorius</i>)	P	S	X
Wood thrush (<i>Hylocichla mustelina</i>)	S	-	X
Hermit thrush (<i>Catharus guttatus</i>)	P	S	X
Swinson's thrush (<i>Catharus ustulatus</i>)	S	S	X
Gray-cheeked thrush (<i>Catharus minimus</i>)	T	I	1
Veery (<i>Catharus fuscescens</i>)	S	S	1
Eastern bluebird (<i>Sialia sialis</i>)	S	S	1
Sylviidae - Old World Warblers, Gnatcatchers, and Kinglets			
Blue-gray gnatcatcher (<i>Polioptila caerulea</i>)	V	-	1
Golden-crowned kinglet (<i>Regulus satrapa</i>)	P	I	X
Ruby-crowned kinglet (<i>Regulus calendula</i>)	S	S	1
Motacillidae - Wagtails and Pipits			
Water pipit (<i>Anthus spinoletta</i>)	S	I	2
Bombycillidae - Waxwings			
Bohemian waxwing (<i>Bombucilla garrulus</i>)	W	W	1
Cedar waxwing (<i>Bombucilla cedrorum</i>)	P	S	X
Laniidae - Shrikes			
Northern shrike (<i>Lanius excubitor</i>)	W	W	1
Loggerhead shrike (<i>Lanius ludovicianus</i>)	S	S	1
Sturnidae - Starlings			
Starling (<i>Sturnus vulgaris</i>)	P	P	1
Vireonidae - Vireos			
Yellow-throated vireo (<i>Vireo flavifrons</i>)	S	I	1
Solitary vireo (<i>Vireo solitarius</i>)	S	S	X
Red-eyed vireo (<i>Vireo olivaceus</i>)	S	S	X
Philadelphia vireo (<i>Vireo philadelphicus</i>)	S	S	1
Warbling vireo (<i>Vireo gilvus</i>)	S	I	1
Parulidae - Wood Warblers			
Black-and-white Warbler (<i>Mniotilta varia</i>)	S	S	1
Tennessee warbler (<i>Vermivora peregrina</i>)	S	S	X
Orange-crowned warbler (<i>Vermivora celata</i>)	T	-	1
Nashville warbler (<i>Vermivora ruficapilla</i>)	S	S	1
Northern parula (<i>Parula americana</i>)	S	S	1
Yellow warbler (<i>Dendroica petechia</i>)	S	S	1
Magnolia warbler (<i>Dendroica magnolia</i>)	S	S	1
Cape May warbler (<i>Dendroica tigrina</i>)	S	S	X
Black-throated blue warbler (<i>Dendroica caerulescens</i>)	S	S	X
Yellow-rumped warbler (<i>Dendroica coronata</i>)	S	S	X
Black-throated blue warbler (<i>Dendroica virens</i>)	S	S	X
Blackburnian warbler (<i>Dendroica fusca</i>)	S	S	X
Chestnut-sided warbler (<i>Dendroica pensylvanica</i>)	S	S	X
Bay-breasted warbler (<i>Dendroica castanea</i>)	S	S	X
Blackpoll warbler (<i>Dendroica striata</i>)	S	S	1
Pine warbler (<i>Dendroica pinus</i>)	S	-	1
Prairie warbler (<i>Dendroica discolor</i>)	V	-	1
Palm warbler (<i>Dendroica palmarum</i>)	S	S	1
Ovenbird (<i>Seiurus aurocapillus</i>)	S	S	X
Northern waterthrush (<i>Seiurus noveboracensis</i>)	S	S	2
Connecticut warbler (<i>Oporornis agilis</i>)	V	-	1
Mourning warbler (<i>Oporornis philadelphia</i>)	S	S	1
Common yellowthroat (<i>Geothlypis trichas</i>)	S	S	X
Wilson's warbler (<i>Wilsonia pusilla</i>)	S	S	1
Canada warbler (<i>Wilsonia canadensis</i>)	S	S	1
American redstart (<i>Setophaga ruticilla</i>)	S	S	X
Floceidae - Weaver Finches			
House sparrow (<i>Passer domesticus</i>)	P	P	3
Icteridae - Meadowlarks, Blackbirds, and Orioles			
Bobolink (<i>Dolichonyx oryzivorus</i>)	S	S	2
Eastern meadowlark (<i>Sturnella magna</i>)	P	I	3
Red-winged blackbird (<i>Agelaius phoeniceus</i>)	S	S	X
Northern oriole (<i>Icterus galbula</i>)	S	I	1
Rusty blackbird (<i>Euphagus carolinus</i>)	S	S	2
Common grackle (<i>Quiscalus quiscula</i>)	S	S	X
Brown-headed cowbird (<i>Molothrus ater</i>)	S	S	3

TABLE 4-4. BIRD SPECIES WHICH MAY OCCUR IN THE BALD MOUNTAIN SITE REGION. Concluded (Page 5 of 5).

Family and Species ¹	Occurrence in Maine ²	Occurrence in Aroostook County ³	Occurrence in Site Vicinity ⁴
Thraupidae - Tanagers			
Scarlet tanager (<i>Piranga olivacea</i>)	S	S	1
Fringillidae - Grosbeaks, Finches, Sparrows, and Buntings			
Cardinal (<i>Cardinalis cardinalis</i>)	P	-	1
Rose-breasted grosbeak (<i>Phaethicus ludovicianus</i>)	S	S	X
Indigo bunting (<i>Passerina cyanea</i>)	S	I	1
Dickcissel (<i>Spiza americana</i>)	T	-	1
Evening grosbeak (<i>Hesperiphona vespertina</i>)	P	P	X
Purple finch (<i>Carpodacus purpureus</i>)	P	P	X
Pine grosbeak (<i>Pinicola enucleator</i>)	P	P	1
Hoary redpoll (<i>Acanthis hornemanni</i>)	W	I	1
Common redpoll (<i>Carduelis flammea</i>)	W	W	1
Pine siskin (<i>Carduelis pinus</i>)	P	P	1
American goldfinch (<i>Carduelis tristis</i>)	P	S	X
Red crossbill (<i>Loxia curvirostra</i>)	P	I	1
White-winged crossbill (<i>Loxia leucoptera</i>)	P	I	1
Rufous-sided towhee (<i>Pipilo erythrophthalmus</i>)	S	-	1
Savannah sparrow (<i>Passerculus sandwichensis</i>)	S	S	3
Grasshopper sparrow (<i>Ammodramus saviannarum</i>)	S	-	3
Sharp-tailed sparrow (<i>Ammodramus caudatus</i>)	S	-	2
Vesper sparrow (<i>Pooecetes gramineus</i>)	S-B	S	3
Dark-eyed junco (<i>Junco hyemalis</i>)	P-B	P	X
Tree sparrow (<i>Spizella arborea</i>)	W	M	3
Chipping sparrow (<i>Spizella passerina</i>)	S-B	S	3
Field sparrow (<i>Spizella pusilla</i>)	S-B	-	1
White-crowned sparrow (<i>Zonotrichia leucophrys</i>)	T	M	3
White-throated sparrow (<i>Zonotrichia albicollis</i>)	P-B	S	X
Fox sparrow (<i>Passerella iliaca</i>)	T	M	1
Lincoln's sparrow (<i>Melospiza lincolni</i>)	S-B	S	2
Swamp sparrow (<i>Melospiza georgiana</i>)	S-B	S	2
Song sparrow (<i>Melospiza melodia</i>)	P-B	S	1
Lapland longspur (<i>Calcarius lapponicus</i>)	W	I	3
Snow bunting (<i>Plectrophenax nivalis</i>)	W	W	3

¹Phylogenetic order and scientific nomenclature after American Ornithologists' Union (1957; 1973; 1976).

²Occurrence as reported by Fall and Barden (1973).

P = Permanent Resident;

P-B = Permanent Resident and Known Breeder in Maine;

S = Summer Resident;

W = Winter Resident;

T = Transient, regularly appearing;

V = Visitant, irregularly appearing.

³Occurrence as reported by Chamberlain (1949).

P = Permanent Resident;

S = Summer Resident;

W = Winter Resident;

M = Migrant;

I = Irregular;

- = Not Recorded.

⁴X = Observed by Woodward-Clyde Consultants' Biologists during field studies conducted during June and September 1980.

1 = Likely to occur or may occur on the site or in the region.

2 = Occurrence likely only adjacent to or on water (streams, rivers, or lakes) in the region.

3 = Site usage and occurrence expected to be limited or lacking, due to absence of appropriate habitat.

B. CORRESPONDENCE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
TRANSPORTATION BUILDING
STATE HOUSE STATION 10 AUGUSTA MAINE



DANA F. CONNORS
Commissioner

July 20, 1987

Thomas A. Rhen
Colonel, Corps of Engineers
Plan Formulation Branch
Department of the Army
New England Division
Waltham, Mass.

Dear Colonel Rhen:

Please be advised that the Department of Transportation will participate in the Streambank Protection Project on Route 161 along Perley Brook in Fort Kent, Maine, and will provide the total non-federal cost of \$13,000.00.

Please complete and forward the necessary project agreement for my signature.

Very truly yours,


Dana F. Connors
Commissioner

DFC/j

cc: Town of Fort Kent
H. Quist, Div. Engr.



STATE OF MAINE
EXECUTIVE DEPARTMENT
STATE PLANNING OFFICE

JOHN R. MCKERNAN, JR.
GOVERNOR

RICHARD H. SILKMAN
DIRECTOR

July 16, 1987

Betty Parfenuk
Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

RE: Emergency Streambank Protection Project (Section 14)

Dear Ms. Parfenuk,

In response to your request regarding rare plants, especially Furbish's Lousewort, along the Perley Brook, Fort Kent, Aroostook County, I have checked the Critical Areas Data Base.

The Data Base includes the:

- 1) Register of Critical Areas
- 2) Natural Areas Inventory
- 3) Field checked potential Critical Areas
- 4) Nominated Critical Areas
- 5) Rare Vascular Plants of Maine
- 6) National Natural Landmark
- 7) Critical Habitats

There appears to be no record of any rare plants based upon the Critical Areas Data Base. Please do not hesitate to contact me if you have further questions about the Critical Areas Program.

Sincerely,

Naomi A. Edelson, Biologist
Critical Areas Program



ERECTED 1839

TOWN OF FORT KENT

FORT KENT, MAINE 04743

Phone 834-3090

July 7, 1987

Howard Quist
Department of Transportation
Presque Isle, Maine 04769

Dear Howard:

Please recall some time ago, we spoke briefly about our continued interest in addressing a long-standing problem located along the banks of the South Perley Brook, particularly that area adjacent to the Route 161 bridge on Market Street.

In order for the U.S. Corps of Engineers to proceed with the project, it is required that a portion of the cost for the project be borne by non-federal sources. We've since been advised that the non-federal share is now \$13,000 and not \$10,000 as originally expected. To this end, we ask for MDOT's continued support for the project in committing the additional capital necessary for this project to continue. I've enclosed a copy of a letter which was sent to Dana on April 22 of this year. Through our telephone discussions recently, I learned he had not received the original letter, but advised me that all reasonable efforts would be made to provide the additional capital for the project to proceed. On or about June 15, a copy of our April 22 letter was again sent to DOT but we haven't yet received any response. We've also been informed by the Army Corps that they are anxiously awaiting word of a commitment.

Any help you can give us would be greatly appreciated. Please call if you feel I can be of help in the matter.

Sincerely,

Alain Ouellette
Town Manager

AO/jrm

~~cc: Bill Swaine~~



ERECTED 1839

TOWN OF FORT KENT
FORT KENT, MAINE 04743
Phone 834-3090

April 22, 1987

Dana Connors, Commissioner
Maine Department of Transportation
State House Station # 16
Augusta, Maine 04333

Dear Dana,

Unlike our friends to the south, we've managed to escape the spring floods once again.

You will recall our conversations about the proposed streambank improvements which have all but been funded by the U.S. Army Corps of Engineers. More specifically, the area of concern is located along Perley Brook at the Maine Route 161 highway crossing on Market Street. In early February, I received a copy of a letter to your attention which basically narrowed down the scope of work as well as the total project cost. As the letter indicates, the non-federal share now represents \$13,000., an increase of \$3,000. over previous estimates.

We've discussed this and other related issues at a number of Town Council Meetings and as a result, the Council requests the continued assistance of MDOT to cover the non-federal portion of \$13,000. We realize this is more than you had originally committed.

I would appreciate your comments as soon as conveniently possible. Thanks for your continued assistance and cooperation.

Sincerely,

Alain Ouellette
Town Manager

cc: William Swaine
Elroy Daigle



MAINE HISTORIC PRESERVATION COMMISSION

55 Capitol Street
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

February 11, 1987

Mr. Joseph Ignazio
Army Corps of Engineers
424 Trapelo Road
Boston, Massachusetts 02254-9149

re: Perley Brook Emergency Streambank Protection, Ft. Kent, Maine

Dear Mr. Ignazio:

My staff has reviewed the location of the proposed Perley Brook emergency streambank protection project.

I find that this project will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.

If I can be of further assistance concerning this matter, please do not hesitate to let me know.

Sincerely,


Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/slm